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THE ESTABLISHMENT OF ECONOMIC FARM UNITS IN
NORTHWESTERN SASKATCHEWAN

WITH PARTICULAR REFERENCE TO LOW-PRODUCTIVITY LAND

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by
M. Ragush



Canada

Economics Division

Marketing Service

DEPARTMENT OF AGRICULTURE

April, 1952



FOREWORD

The development of an agricultural policy should proceed along the lines of achieving a productive pattern that will make the most efficient use of the farm resources. The use of land and the study of the economic problems associated with that use are not an end in themselves, but only have meaning when related to human welfare. The betterment of the conditions of living is the standard by which all policies and programs of land use should be measured.

The main wave of settlement of lands in Northwestern Saskatchewan took place in the thirties by prairie farmers under distressed conditions. At that time, the productive capacity of all northern lands had not been evaluated. Consequently, adjustments have been necessary in land use and farm practice. New concepts relating to type of farm, farm size and other phases of enterprise selection, farm organization and operation, consistent with the land resources are still in process.


This study attempts to indicate the financial reward which the average farmer can expect with the resources at his command. The main emphasis has been to indicate the minimum requirements of land and farm set up to yield a reasonable level of living. The budgets, based on desirable land use, show the necessary conditions for successful farming in Northwestern Saskatchewan.

ACKNOWLEDGMENT

The organization and development of this analysis through the synthetic method by means of budgets, was carried out under the direction and guidance of Professor H. Van Vliet, Head of the Department of Farm Management, University of Saskatchewan, in 1951. His advice was constantly sought and his awareness of the importance of the situation made it possible to deal directly with the central problem.

Helpful assistance was received constantly from R.A. Stutt, Officer-in-Charge of the Economics Division, Canada Department of Agriculture, and other members of the staff.

An expression of appreciation is offered to all the farmers who supplied the basic data in the Farm Business and Land Settlement Surveys conducted in the area in 1942 and 1947. Without their co-operation it would have been impossible to come to grips with the situation and to deal with the problem in a practical way.



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TABLE OF CONTENTS

	<u>Page</u>
Summary	i
Introduction	1
Method of Study	1
Soils and Climate	2
Types of Farming	2
Land Productivity by Soil Groups	2
Budget Analysis Procedure	3
Comparative Net Returns	4
Application of Budget Analysis in the Establishment of Economic Farm Units	4
The Use of Additional Grazing Land as a Factor in the Establishment of Economic Farm Units	11
Estimated Grazing Capacity of Lands Typical of the Area	14
APPENDIX A	15
APPENDIX B	17
APPENDIX C	53

SUMMARY

The availability of tracts of unused lands in the woodland region of Northwestern Saskatchewan necessitates the formulation of a guide in settling up new or enlarging established farm units that would provide the farmer and his family with a reasonable farm income and a decent level of living. The present study attempts through the method of budgetary analysis to appraise the economic possibilities of the farm land in the area.

Four different types of farm budgets were set up to study the effect of variations in the size and the level of productivity on the economic returns of the prospective farms. The four farm budgets represent:

1. A 100 acre farm of low productivity.
2. A 300 acre farm of low productivity.
3. A 100 acre farm of high productivity.
4. A 300 acre farm of high productivity.

The preparation of each of the four farm budgets involved a series of steps beginning with a description of the farm organization, the cropping system, the livestock program, capital investment and ending with a summary of anticipated receipts and expenditures. Particular emphasis was given to enterprise selection and production organization to obtain a practical farm situation of maximum returns from the available resources.

The evaluation and application of the budgetary results is based on the net returns to the operator for his labour and investment which represents the money for family living expenses, additions to savings and other investment, and farm capital accumulation. The net returns on the two 100 acre farms of low and high productivity were \$325 and \$481 respectively. Assuming that \$800 is required to provide a family of four or five persons with a decent standard of living, it is evident that the 100 acre farm is not large enough. The net returns of \$1,153 on the 300 acre farm of low productivity and \$1,785 on the 300 acre farm of high productivity indicate that a 300 cropland acre farm is large enough to allow a margin for capital accretion in addition to a reasonable standard of living. From a graphic representation of the net returns per acre of cropland of the four farms, it is estimated that 224 cropland acres of low productivity and 157 cropland acres of high productivity are required to yield a net return of \$800 as a minimum allowance towards family living expenditures.

The use of additional grazing land as a factor in the establishment of economic farm units involved the setting up of two additional budgets to determine the probable net income to be derived from various sizes of beef cattle enterprises. The five-cow, small-sized beef enterprise had a net return to labour of \$12.20 per cow unit as compared with \$15.30 for the ten-cow, large-sized beef enterprise. The difference of \$3.10 per cow unit may be attributed to the greater efficiency in the use of available resources in the large-size beef enterprise. To broaden the scope of the budget data, a graphic presentation is made to include the net returns per cow unit for enterprises of different sizes.

The study also includes the average wheat yields on the various soil types in Northwestern Saskatchewan and the grazing capacity of the pasture as further aids in estimating the economic possibilities of the farm land.

THE ESTABLISHMENT OF ECONOMIC FARM UNITS IN NORTHWESTERN SASKATCHEWAN
WITH PARTICULAR REFERENCE TO LOW-PRODUCTIVITY LAND

M. Ragush 1/

Introduction.- Wide areas of Northwestern Saskatchewan have been settled without a prior appraisal of their economic suitability to agriculture. Many settlers, especially those who had come from the southern part of the Province in the thirties, established their farm units on land marginal or even submarginal for crop production. These farm units were small and provided little or no room for expansion. The high costs involved and the slow progress achieved in the cultivation of wooded land resulted in relatively low standards of living and some discouragement. In many cases, governmental financial assistance had to be provided either in the form of direct relief or re-establishment aid. This unhappy situation gave added emphasis to the need of increasing farm size in order to provide the farmer and his family with a reasonable farm income and a decent level of living.

Relatively large tracts of land of low productivity are still available for setting up new or enlarging old farm units. In establishing these units, government officials and farmers are concerned not only with the physical characteristics of the land but also with its economic possibilities or, more specifically, with its potential income-producing capacity.

Method of Study.- In order to throw some light on the problem, the substitution method of budget analysis is used in this study as a guide in the appraisal of potential farm land. Consideration is given principally to enterprise selection and production organization, two of the main aspects of sound farm planning.

In budgeting, the farmer's central problem hinges on the apportionment of his resources among different lines of production and in the adjustment of this apportionment from time to time. The farmer can arrive at a workable decision by making actual calculations or estimates of the comparative net returns from alternative types of investment in livestock, crops, power, machinery, buildings, and other productive resources. The main objective is to obtain the maximum returns from the resources at his disposal. The various steps involved in the preparation of a farm budget include a description of the farm organization, the cropping system, the livestock program, capital investment, and calculation of anticipated receipts and expenditures.

For the purposes of the present study four different types of budgets were set up. These types vary according to size of farm and levels of productivity. Thus, the four farm budgets represent:

1/ Technical Officer, Economics Division, Canada Department of Agriculture.

1. A 100-acre farm of low productivity.
2. A 300-acre farm of low productivity.
3. A 100-acre farm of high productivity.
4. A 300-acre farm of high productivity.

Original data were obtained from records used in two previous farm business studies in northern Saskatchewan. 1/ Prices paid by farmers for goods purchased or commodities sold are estimated on the basis of average prices over a period of years. 2/

Soils and Climate.- The farms under study are located in the woodland region of Northwestern Saskatchewan. Most of the area lies in the grey or the degraded black soil zones. The grey soil zone is characterized by a limited amount of organic matter, a considerable amount of leaching, and a wide variation in soil types. Soils in the degraded black soil zone of this area are generally heavy textured and productive.

The average annual precipitation in the area is about 13 inches. This is not much higher than in central Saskatchewan but year-to-year variations are far less evident. In the northern areas the lower temperatures prevent excessive moisture evaporation but the shorter frost-free period increases the risks involved in crop production and the long winter season reduces the grazing period for livestock.

Types of Farming.- There are considerable variations in types of farms in the area. The most predominant type, however, appears to be the livestock grain combination type. Factors which favour the adoption of this type of farming are the following.

1. The high proportion of land of low productivity in the area;
2. The high cost of clearing and breaking land in relation to expected productivity;
3. Long distances from railheads over a large part of the area, with resulting high costs for the marketing of grain crops;
4. Problems associated with land use and soil conservation once these lands are brought under cultivation;
5. High cost of modern machinery necessary to produce grain crops on farms with a limited acreage in cropland.

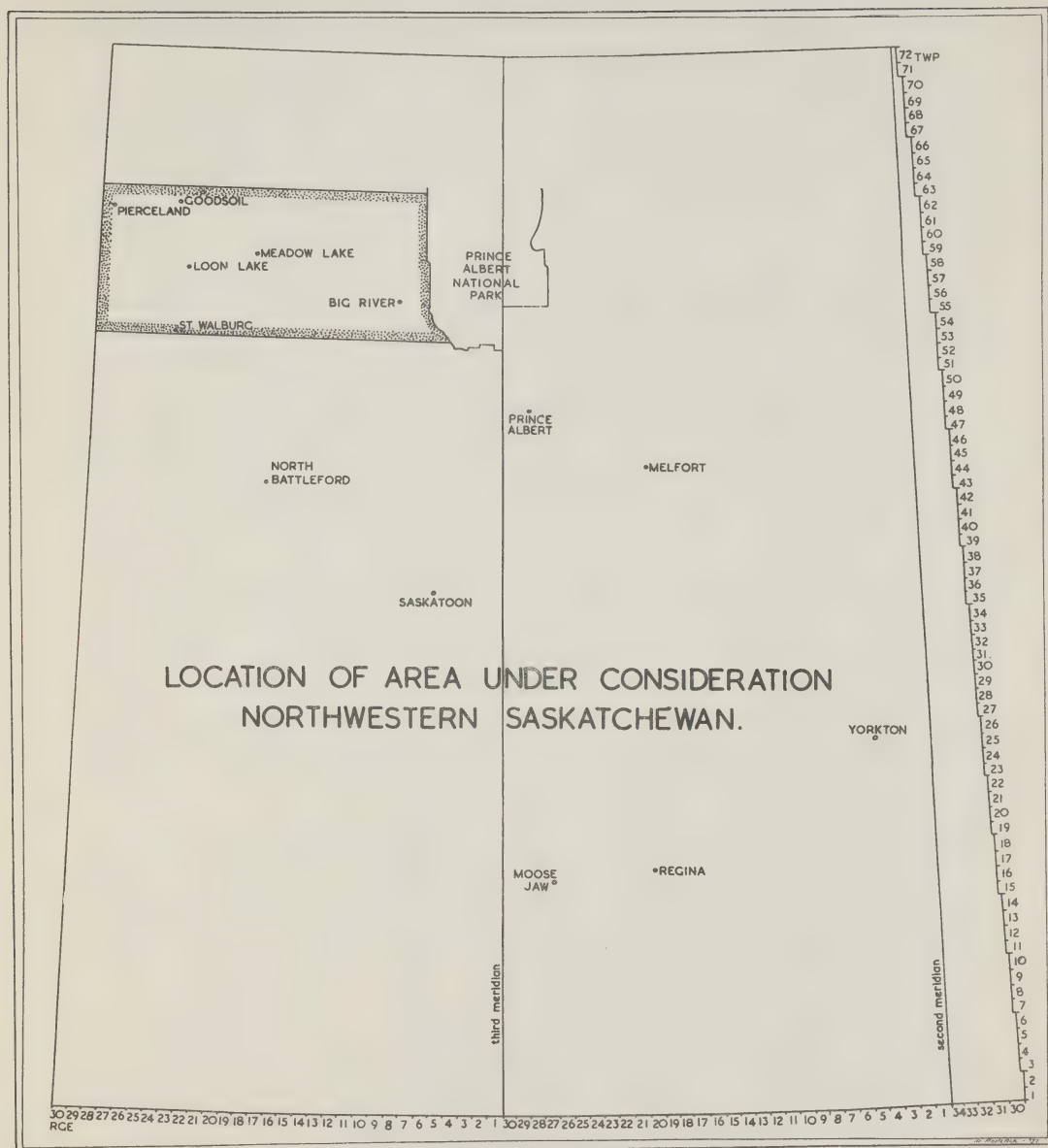
Land Productivity by Soil Groups.- Information on wheat yields for various soil groups was obtained from the records used in the two farm business studies mentioned previously. Some 400 individual crop histories were obtained from these records. The soil type predominating on each farm was ascertained by locating the farms on the soil map of the area. 3/

1/ An Economic Study of Land Settlement in Representative Pioneer Areas of Northern Saskatchewan by R.A. Stutt and H. Van Vliet. Pub. No. 767, Technical bulletin No. 52, Economics Division, Canada Department of Agriculture in co-operation with Department of Farm Management, University of Saskatchewan, June 1945.

Also, Changes in the Farms of West Central and Northern Saskatchewan, 1942-43 to 1947 by M.E. Indal. Processed publication, Economics Division, Canada Department of Agriculture. September 1951.

2/ See Appendix C for actual prices used in the following budgets.

3/ Saskatchewan Soil Survey Report No. 13. Soils Department, University of Saskatchewan.



The soil types were arranged in soil groups according to the index rating. Type, rating and group number of the soils common to the area are shown in Table 1 of Appendix A.

Average crop yields are higher for northwestern Saskatchewan than for the province as a whole. For the low productivity soil groups (VII, VIII, IX and X) the long-term (1930-46) average yield was 18.5 bushels of wheat per acre, which is 6.1 bushels lower than the 24.6 average for the high productivity soil groups (II, III, and IV). A summary of annual average wheat yields by soil groups, for the 1930-46 period, is provided in Table 2 of Appendix A.

The low productivity soil groups are represented by the Loon Lake, the Bodmin and the Horsehead loams, light loams, gravelly loams and the stoney phase, while the high productivity soil groups include the Beaver, the Meadow Lake and the Makwa loams and clay loams.

The yields of coarse grains were based on the usual ratio of oats and barley yields to wheat as indicated by all yield estimates of municipal units in northwestern Saskatchewan. 1/ The usual ratio was 1.87 for oats and 1.33 for barley. Thus, for example, the long-time yield of oats was calculated as follows: in Soil Groups VII, VIII and X, 18.5 (yield of wheat per acre) x 1.87 = 34.6 bushels.

Budget Analysis Procedure.- The farmer first determines how his land will be used and what system of crop rotation he will adopt. He calculates the estimated yields and the amounts to be sold or used on the farm. The land use and crop reports for the four farms included in this study are presented in Tables 1a, 1b, 1c, 1d in Appendix B.

Next comes the decision as to the amounts and kinds of livestock to be kept and estimates of sales and use on the farm, of animals and animal products. Reports on livestock and livestock products appear in Tables 2a and 3a, 2b and 3b, and 2c and 3c, and 2d and 3d, in Appendix B.

Once the amounts and kinds of livestock have been determined, it becomes necessary for the farmer to make an estimate of feed requirements for the various kinds of animals. Tables 4a, 4b, 4c and 4d (Appendix B) indicate the average quantity of wheat, oats, barley, and fodder used by various kinds of animals on Saskatchewan farms. These are not standard figures to be adopted by any farmer but are considered to be representative of the amounts actually used on farms in northwestern Saskatchewan.

The next step is the making of an inventory of the investment in buildings, improvements, machinery and equipment. Depreciation, repairs and other costs involved must be calculated. Data relating to investments and relevant costs are presented in Tables 5a and 6a, 5b and 6b, 5c and 6c, and 5d and 6d in Appendix B. The work schedules for power machinery as outlined in Tables 7a, 7b, 7c, and 7d (Appendix B) are helpful in calculating the tractor fuel costs. Other costs are made up of cash farm operating expenses and the breakdown of these expenses is given in Tables 8a, 8b, 8c and 8d.

A summary of receipts, expenses and returns to operator's labour

and investment is presented in the five tables which appear on the following pages, as well as on Tables 9a; 10a and 11a; 9b, 10b and 11b; 9c, 10c and 11c; and 9d, 10d, and 11d of Appendix B. Operator's income represents the annual net returns to the operator for his labour and his investment.

Comparative Net Returns.- The net returns to the operator for his labour and investment is the money available for family living expenses, additions to savings, and farm capital accumulation. These returns provide the criterion to be used in comparing the financial success for our four farm budgets.

The farm with 100 acres of cropland of low productivity is an example of a farm organization with net returns insufficient to provide for family living costs. Net returns amount to only \$325, or \$3.25 per acre of cropland. Assuming that a family consists of four or five persons and that \$800 is required for a decent standard of living, it is readily seen that this 100-acre farm does not provide its operator with a large enough income.

The situation does not differ very much on the 100-acre farm with a high productivity soil. The net returns for this farm are \$481, or \$4.81 per acre of cropland. These returns are too small to provide for all family living requirements. The greater productivity of the land may contribute to higher net returns but more cropland and grazing land are necessary for the farm to reach an economic size.

One of the two larger farms had 300 acres of land low in productivity, while the other had 300 acres of good cropland. Returns on operator's labour and investment were \$1,153 and \$1,785 respectively. Net returns per acre of cropland were \$3.84 on the first of these farms and \$5.95 on the second farm. These returns reflect a greater efficiency in the use of machinery, equipment, and other resources. And, once a reasonable allowance is made of family living expenditures, there is enough left to permit capital accumulation from year to year.

Application of Budget Analysis in the Establishment of Economic Farm

Units.- The influence of size of farm and levels of productivity on net farm income is well demonstrated by the budget method of analysis. This type of analysis serves as a valuable guide in the establishment of economic farm units.

Information made available through our budgets, however, relates only to 100 and 300-crop acre farms, at two different levels of productivity. To broaden the scope of the study, a graphic presentation of the net returns per acre of cropland, at various levels of productivity, and for various sizes of farms is included (Figure 1).

By this method it is possible to estimate the net returns for any given size of farm at various productivity levels. This is done by interpolating the budget data. For example, one may estimate that a 200-acre farm on Beaver River-Dorintosh loam soils and with a wheat producing capacity

Table 1.- Budget Summary for a Farm with 100 Acres in Cropland in
Soil Groups VII, VIII and X in Northwestern Saskatchewan

Land Use	Acres	Cash Operating Expenses	Amount	Receipts and Expenses
Wheat	25	Seed treatment	3	Receipts
Oats	15	Fertilizer	30	Crop sales 626
Barley	10	Blacksmith and welding	15	Livestock sales 419
Alfalfa (seed)	10	Equipment repairs	61	Livestock produce sales 179
Alfalfa (hay)	5	Small hardware	10	
Improved pasture	10	Binder twine	19	Custom work 40
Summerfallow	25	Fire insurance	2	Total receipts 1,264
Total cropland	100	Taxes	41	
		Tractor gas, oil and grease	109	
Farmstead	5	Real estate	21	Expenses
Total improved	105	Labour and board of labour	141	Cash operating 678
		Threshing	108	Depreciation
Unimproved	205	Livestock purchases	15	- machinery and equipment 124
Wild hay	10	Feeds and supplements	5	- buildings and improvements 64
Total	320	Cash truck expenses (farm)	77	Total expenses 866
		Miscellaneous	21	Net farm income 396
Livestock Inventory		Total	678	
Kind	Numbers			
Work horses	2	Interest on borrowed capital		73
Milk cows	5			
Steers and heifers		Return to operator's labour and investment		325
- 2 year old	2			
- 1 year old	3	Return to operator's labour and investment per acre of cropland		3.25
Calves	5			
Sows	2			
Other hogs	12			
Poultry	100			

Table 2.- Budget Summary for a Farm with 100 Acres in Cropland in
Soil Groups II, III and IV in Northwestern Saskatchewan

Land use	acreage:	Cash operating expenses	amount:	Receipts and expenses
			\$	
Wheat	25	Seed treatment	3	Receipts
Oats	15	Fertilizer	30	
Barley	10	Blacksmith and welding	15	Crop sales 915
Alfalfa (seed)	10	Equipment repairs	69	Livestock sales 419
Alfalfa (hay)	5	Small hardware	10	Livestock produce sales 179
Improved pasture	10	Binder twine	22	Custom work 40
Summerfallow	25	Fire insurance	3	Total receipts 1,553
Total cropland	100	Taxes	79	
		Tractor gas, oil and grease	109	Expenses
Farmstead	5	Real estate	26	
Total improved	105	Labour and board of labour	151	Cash operating 768
		Threshing	129	Depreciation
Unimproved	205	Livestock purchases	15	- machinery and equipment 136
Wild hay	10	Feeds and supplements	5	- buildings and improvements 70
Total	320	Cash truck expenses to farm	81	Total expenses 974
		Miscellaneous	21	
Livestock inventory		Total	768	Net farm income 579
Kind	Numbers			Interest on borrowed capital 98
Work horses	2			
Milk cows	5			Return to operator's labour and investment 481
Steers and heifers				
- 2 year old	2			Return to operator's labour and investment
- 1 year old	3			per acre of cropland 4.81
Calves	5			
Sows	2			
Other hogs	12			
Poultry	100			

Table 3.- Budget Summary for a Farm with 300 Acres in Cropland on
Soil Groups VII, VIII and X in Northwestern Saskatchewan

Land use	: :Acreage:	: :Cash operating expenses	: :Amount:	: :Receipts and expenses
Wheat	90	Seed treatment	9	Receipts
Oats	50	Fertilizer	100	Crop sales
Barley	20	Blacksmith and welding	25	Livestock sales
Alfalfa (seed)	20	Equipment repairs	194	Livestock produce sales
Alfalfa (hay)	10	Small hardware	25	Custom work
Grass hay	10	Binder twine	9	Total receipts
Improved pasture	20	Fire insurance	5	3,210
Summerfallow	80	Taxes	102	
Total cropland	300	Tractor gas, oil and grease	431	
		Real estate	44	Expenses
Farmstead	5	Labour and board of labour	301	Cash operating
Total improved	305	Threshing	20	Depreciation
Unimproved	315	Livestock purchases	15	- machinery and equipment
Wild hay	20	Feeds and supplements	6	- buildings and improvements
Total	640	Cash truck expenses to farm	113	Total expenses
		Miscellaneous	27	1,897
		Total	1,426	Net farm income
Livestock inventory				1,313
Kind	Number			Interest on borrowed capital
Work horses	2			160
Milk cows	5			Return to Operator's
Beef cows	2			labour and investment
Steers and heifers	2			1,153
- 2 year old	2			Return to operator's
- 1 year old	4			labour and investment
Calves	7			per acre of cropland
Sows	2			3.84
Other hogs	12			
Poultry	100			

Table 4.- Budget Summary for a Farm with 300 acres in cropland on Soil Groups II, III and IV in Northwestern Saskatchewan

Land use	Acres	Cash operating expenses	Amount	Receipts and expenses
Wheat	90	Seed treatment	9	Receipts
Oats	50	Fertilizer	100	
Barley	20	Blacksmith and welding	25	Crop sales
Alfalfa (seed)	20	Equipment repairs	218	Livestock sales
Alfalfa (hay)	10	Small hardware	25	Livestock produce sales
Grass hay	10	Binder twine	9	Custom work
Improved pasture	20	Fire insurance	6	Total receipts
Summerfallow	80	Taxes	204	
Total cropland	300	Tractor gas, oil and grease	431	Expenses
		Real estate	53	
Farmstead	5	Labour and board of labour	301	Cash operating
Total improved	305	Threshing	20	Depreciation
		Livestock purchases	15	- machinery and equipment
Unimproved	315	Feeds and supplements	6	- buildings and improvements
Wild hay	20	Cash truck expenses to farm	118	Total expenses
Total	640	Miscellaneous	27	
		Total	1,567	Net farm income
				2,010
Livestock inventory				Interest on borrowed capital
				225
Kind	Number			
Work horses	2			
Milk cows	5			Return to operator's labour and investment
Beef cows	2			1,785
Steers and heifers				
- 2 year old	2			
- 1 year old	4			Return to operator's labour and investment per acre of cropland
Calves	7			5.95
Sows	2			
Other hogs	12			
Poultry	100			

Table 5.- Summary of Farm Receipts, Expenses and Net Returns for the Four Farm Budgets

	Farm A - 100 acres		Farm B - 100 acres	
	Cropland on soil		Cropland on soil	
	Groups VII, VIII and X		Groups II, III and IV	
	Per	Per acre	Per	Per acre
	farm	of cropland	farm	of cropland
	-		-	
	dollars		dollars	
<u>Receipts</u>				
Crop sales	626	6.26	915	9.15
Livestock sales	419	4.19	419	4.19
Livestock produce sales	179	1.79	179	1.79
Custom labour, etc.	40	0.40	40	0.40
Total receipts	1,264	12.64	1,553	15.53
<u>Expenses</u>				
Operating expenses	678	6.78	768	7.68
Depreciation	124	1.24	136	1.36
- machinery and equipment	64	0.64	70	0.70
- buildings and improvements	866	8.66	974	9.74
Total expenses	398	3.98	579	5.79
Net farm income	73	0.73	98	0.98
Interest on borrowed capital				
Return to operator's labour and investment	325	3.25	481	4.81

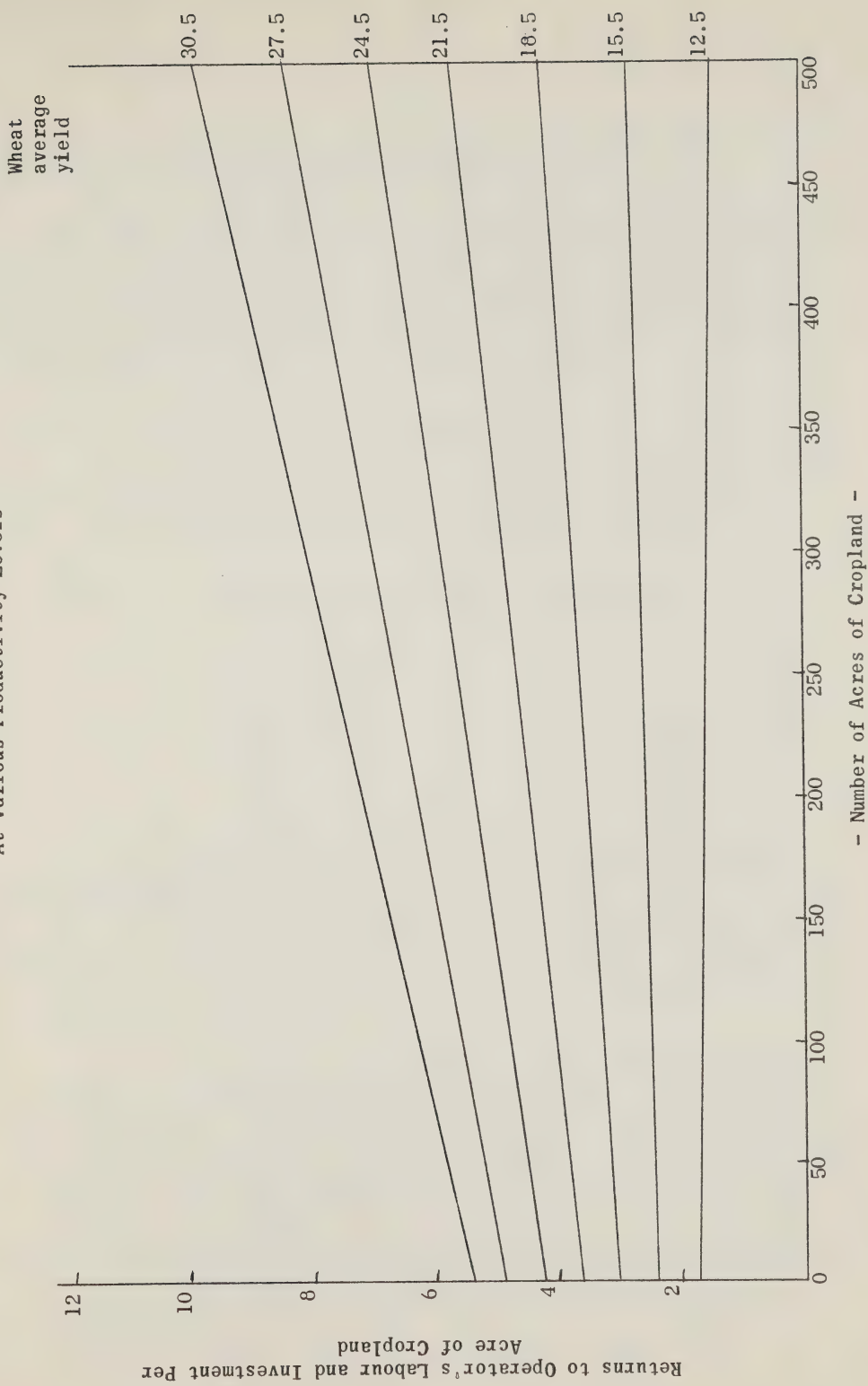
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- Continued -

Table 5.- Summary of Farm Receipts, Expenses and Net Returns for the Four Farm Budgets - Continued

	Farm C - 300 acres		Farm D - 300 acres	
	cropland on soil		cropland on soil	
	Groups VII, VIII and X		Groups II, III and IV	
	Per	Per acre	Per	Per acre
	farm	of cropland	farm	of cropland
	-		-	
	dollars		dollars	
<u>Receipts</u>				
Crop sales	2,416	8.05	3,298	10.99
Livestock sales	503	1.68	503	1.68
Livestock produce sales	179	0.59	179	0.79
Custom labour, etc.	112	0.38	112	0.38
Total receipts	3,210	10.70	4,092	13.64
<u>Expenses</u>				
Operating expenses	1,426	4.75	1,567	5.22
Depreciation	343	1.16	380	1.27
- machinery and equipment	123	0.41	135	0.45
- buildings and improvements	1,897	6.32	2,082	6.94
Total expenses	632	4.38	2,010	6.70
Net farm income	160	0.53	225	0.75
Interest on borrowed capital				
Return to operator's labour and investment	1,153	3.84	1,785	5.95

Figure 1.- Relation of Size to Returns to Operator's Labour and Investment per Acre of Cropland
At Various Productivity Levels



of 21.6 bushels per acre (Appendix A, Tables 1 and 2) would yield a net return of \$4.40 per acre of cropland or \$880 for the farm.

Similarly, one can determine the size of farm required to reach various levels of net returns, on farms with different levels of productivity. For example, a farmer may operate a farm on Loon Lake light loam soil and with an average yielding capacity of 18.4 bushels of wheat per acre. If he desires to obtain a net cash income of \$800 for his labour and investment, his farm must have about 224 acres in cropland. Table 6 gives a schedule of the number of acres of cropland, at different levels of productivity, necessary to reach various levels of income.

Table 6.- Acres of Cropland at Different Productivity Levels Required for Various Levels of Income

Yield (bus. per acre)	Returns to operator's labour and investment					
	\$500	\$600	\$700	\$800	\$900	\$1,000
	- acres of cropland -					
12.5	325	400	467	525	-	-
15.5	196	230	268	301	333	368
18.5	147	175	200	224	250	270
21.5	119	143	163	183	203	222
24.5	104	123	140	157	174	188
27.5	91	107	122	138	152	166
30.5	82	95	109	123	136	148

The Use of Additional Grazing Land as a Factor in the Establishment of Economic Farm Units.- The use of additional grazing land may present the farmer with an opportunity to establish an adequate scale of operations. There are unsettled tracts of land of low productivity in northwestern Saskatchewan. These lands are of limited value for cultivation purposes but may be used quite advantageously for grazing purposes. An additional, or expanded cattle enterprise may be sufficient, in some cases, to convert the farm into an economic unit.

In this section of the study an attempt will be made to determine the probable net returns to labour to be derived from various sizes of beef cattle enterprises. To this end, two additional budgets have been set up. One five-cow unit 1/ and a ten-cow unit enterprise were selected in order to determine the differences in net returns associated with different scales of intensity. The results are presented in Table 7 and 8. The larger-sized beef enterprise had a net return of \$15.30 per cow unit as compared with

1/ A cow unit consists of the following equivalents: 1 beef cow (1.25 grazing units); 1 two-year old steer or heifer (1.0 grazing units); 1 year old steer or heifer (0.6 grazing units); and 1 calf (no grazing units).

Table 7.- Budget for a Five-Cow Unit Beef Cattle Enterprise in Northwestern Saskatchewan

Kind	No. : Wt. : Price : Value :	Births :	Sales :	Closing inventory :
	No. : Wt. : Price : Value :	No. :	No. : Wt. : Price : Value :	No. : Wt. : Price : Value :
	- dollars -		- dollars -	- dollars -
Cows	5 1,150 5.00 288		1 1,200 5.00 30	5 1,150 5.00 288
Steers and				
heifers	4 825 7.25 239	4	7.25 261	4 825 7.25 239
- 2 year old	4 600 7.25 174			4 600 7.25 174
- 1 year old	4 125 7.25 41	4 1/2		4 125 7.25 41
Calves				
Total	742		291	742
Expenses	Price : Value		Income - cost summary	
	- dollars -		- dollars	
Food costs			Total receipts	291
10 tons grain hay	6.50 65		Total expenses	230
10 tons slough hay	4.00 40		Net returns to labour	61
100 lbs. salt	1.00 1		Net returns to labour per	
Other expenses			cow unit	12.20
Buildings	29			
Breeding fees	5			
Veterinary and medicine	7			
Horses and equipment	16			
Pasture	55			
Capital charge - 4%	12			
Total expenses	230			

Table 8.-- Budget for a Ten-Cow Unit Beef Cattle Enterprise in Northwestern Saskatchewan

Kind	No.	Wt.	Price: Value	Births	Sales	Closing inventory
			- dollars -			
Cows	10	1,150	5.00	1	1,200	5.00
Steers and heifers	9	825	7.25	8	900	7.25
- 2 year old	9	600	7.25			7.25
- 1 year old	9	125	7.25	9		7.25
Calves						
Total						582
Expenses			Price: Amount			Income - cost summary
			- dollars -			- dollars -
Food costs						
20 tons grain hay			6.50			582
20 tons slough hay			4.00			429
200 lbs. salt			1.00			153
Other expenses						
Buildings			46			Net returns to labour
Breeding fees			10			per cow unit
Veterinary and medicine			15			15.30
Horses and equipment			32			
Pasture			91			
Capital charge - 4%			23			

\$12.20 for the small-sized enterprise. The difference of \$3.10 per cow unit may be attributed to the difference in scale of operations.

Many factors add to the complexities involved in the appraisal of income and cost relationships pertaining to the organization of a beef cattle enterprise. Variations in knowledge and managerial ability, and uncertainties and various types of risks affecting organizational efficiency, are all factors that do not lend themselves to mathematical measurements. However, these highly variable factors are among the most important determinants of net returns and must be appraised in the light of particular conditions or circumstances.

The scope of the budget data for the five and the ten-cow enterprises can be broadened so as to include cattle enterprises of other sizes. This is done by plotting the data on a graph and using interpolation and extrapolation devices to obtain the net returns to labour per cow unit for enterprises of different sizes.

The number of cow units required to reach an economic size of farm business depends directly on the size of the operator's income to be derived from the major enterprise. As an illustration, if the farm business provides an operator's income of \$600 when \$800 are required to assure an adequate level of living, the operator will need an additional net income of \$200. To secure this additional income, he will need a supplementary beef enterprise of 12 or 13 cow units.

Estimated Grazing Capacity of Lands Typical of the Area.- 1/ The type of land available for settlement in this area is considered submarginal for crop farming but suitable for grazing by livestock enterprise. Available in large tracts, it favours an extensive organization of the individual livestock business.

The carrying capacity indicates the number of grazing units that can be maintained on various kinds of grazing land in Northwestern Saskatchewan. This information will help the farmer in determining the required number of livestock in the establishment of an economic farm unit. For this reason, estimates of carrying capacity are presented below:

A. Basic Grazing Rates:

Normal poplar stand - 6 grazing units per quarter section
Open poplar stand - 7.5 grazing units per quarter section

B. Additional Grazing Rates:

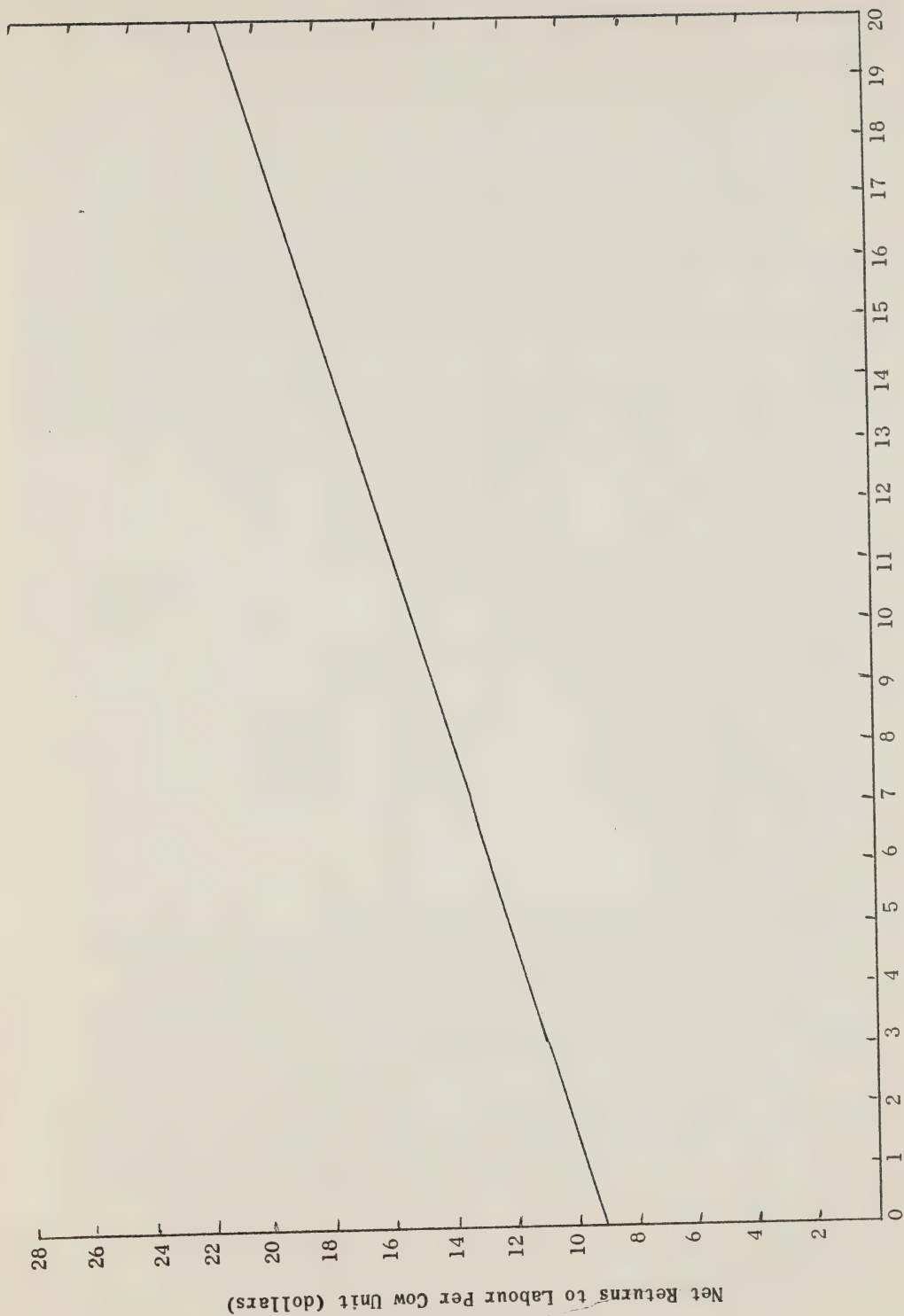
For wet meadow - add 1.25 grazing units for each 8 acres
For mixed meadow - add 1.25 grazing units for each 10 acres
For dry meadow - add 1.25 grazing units for each 16 acres
For muskeg and subtract 1.25 grazing units for each 40
jackpine - acres from basic grazing rates.

These estimates are made on the basis of a seven-month grazing period. For Northwestern Saskatchewan, however, the duration of the grazing season is probably nearer to five months. Other estimates should, therefore, be adjusted accordingly.

After consideration of the number of additional cattle required, the farmer must determine the area of additional grazing land required to provide the necessary supplement to his farm income.

1/ This discussion is based on estimates supplied by H.M. Rice, Lands Branch, Saskatchewan Department of Agriculture.

Figure 2.- Relationships Between Number of Cow Units and Net Returns to Labour Per Cow Unit



APPENDIX A

Table 1.- Type, Rating and Group Number of Soils in Northwestern Saskatchewan Farm Business Survey Areas of 1942 and 1947

Soil group ^{a/}	II	III	IV	V	VI
Soil rating ^{b/}	74-79	68-73	62-67	56-61	50-55
	MdCL ^{c/}	BvCL Bv-MdCL MdL MdC-CL Bv-MdC-CL	Bv-DoCL Ho-MaCL MaL MaL-CL BvCL (st)	Bv-DoL HoMaL Ma-HoCL-L MaL-CL (G)	DoL LnCL Sb-SyL
Soil group ^{a/}	VII	VIII	IX	X	
Soil rating ^{b/}	44-49	38-43	32-37	31 and under	
	DoL-SyvL HoL-GbGL Ho-LnL LnCL (st) LnL-CL	Ho-LnL (st) LnL LnL-LL SbFL	LnL (st) LnLL LnL-BdGL SyFL	BdLL BdGSL BdGSL-PS Ed-GbGSL LnLL (st) LnL-BdGSL PS SyFL-PS	

a/ Soil groups were arbitrarily determined by including any soils having an index of 80 and over in the first group and soils having an index of 31 and under in the last group and dividing the remaining soils into eight groups, each group having an index interval of six points.

b/ The soil rating refers to the comparative index rating developed by the Soils Department, University of Saskatchewan. For further information see "A Method of Obtaining a Comparative Rating of Saskatchewan Soils". J. Mitchell, Scientific Agriculture, January, 1940.

c/ For a description of the various soil associations and types see "Soil Survey of Saskatchewan covering the Agriculturally Settled Areas North of Township 48". Mitchell, J., Moss, H.C., and Clayton, J.S., University of Saskatchewan. Soil Report No. 13.

APPENDIX B

Table 1a.- Budget for Soil Groups VII, VIII and IX. One Hundred Acres in Cropland

Land Use and Crop Report - Farm A

Land use	Acreage	Average yield	Total yield	Farm used		Sales	
				Seed	Feed	Amount	Price : Value
							- dollars -
Wheat	25	18.5 bu.	462 bu.	44 bu.	67 bu.	351 bu.	0.90 316
Oats	15	34.6 bu.	519 bu.	37 bu.	478 bu.	-	0.50 -
Barley	10	24.6 bu.	246 bu.	20 bu.	193 bu.	33 bu.	0.50 16
Alfalfa (seed)	10	150 lb.	1,500 lb.	30 lb.	-	1,470 lb.	0.20 294
Alfalfa (hay)	5		15 tons		15 tons		
Grass hay	-						
Improved pasture	10						
Summerfallow	25						
Total cropland	100						
Farmstead	5						
Total improved	105						
Unimproved	205						
Wild hay	10						
Total	320						626
Average per acre of cropland							6.26

Table 2a.-- Livestock Report -- Farm A

Kind	Average inventory			Birth		Sales		Farm used		
	No.	Wt.	Value	Numbers	No.	St.	Value	No.	St.	Value
	- lb.	- lb.	- \$			- lb.	- \$		- lb.	- \$
Work horses	2		100							
Milk cows	5	1,150	288		1	1,200	60			
Beef cows										
Steers and heifers										
- 2 years	2	825	120		1	900	65			
- 1 year	3	600	130		$\frac{1}{2}$	500	18	$\frac{1}{2}$	500	18
Calves	5	125	45	5	2	400	58			
Sows	2		56		1		28			
Other hogs	12		60	12	9	200	166	2	200	37
Poultry	100		60		40		24	40		24
Total			859				419			79
Average per acre of cropland			8.59				4.19			0.79

Table 3a.- Inventory of Livestock Products - Farm A

Kind	Total production	Price	Value	Home used		Sales			
				Amount	Price	Value	Amount	Price	Value
				- dollars -					
Butterfat	750 lb.	0.30	225	300 lb.	0.30	90	450 lb.	0.30	135
Eggs a/	360 doz.	0.20	72	140 doz.	0.20	28	220 doz.	0.20	44
Total			297			118			179
Average per acre of cropland									
									1.79

a/ average production of nine doz. per bird with 40 per cent of flock as layers.

SUMMARY OF LIVESTOCK AND LIVESTOCK PRODUCTS SALES

Livestock sales	\$ 419
Dairy product sales	135
poultry products: sales	44
	\$ 598

Table 4a.- Feed Report - Farm A

Class of livestock	Number	Wheat	Oats	Barley	Total
		- bushels -			- tons -
Work horses	2		103		7
Milk cows	5		88	31	15
Beef cows					
2-year old steers and heifers	2				4
Yearling steers and heifers	3				3
Calves	5		22	16	2
Sows	2)				
	12)		206	146	
Other hogs					
Poultry	100	67	59		
Total		67	478	193	31

Table 5a.- Buildings and Improvements - Farm A

Building	Value	Depreciation		Repairs - paint, etc.	
		Rate	Amount	Rate	Amount
House	750	2.5	19	1.75	13
Barn	500	3.0	15	1.25	6
Chicken house	100	4.5	4	0.5	
Granaries	200	4.5	9	0.5	1
Garage and machine shed	100	4.5	4	0.5	
Hog house and other buildings	70	4.5	3	0.5	
Fencing	175	3.5	6	0.5	1
Wells, dugouts, etc.	150	3.0	4	0.1	
Total	2,045		64		21
Average value per acre of cropland	20.45		0.64		0.21

Table 6a.- Machinery and Equipment Inventory - Farm A

	Size	Value when new	Depreciation		Repairs	
			Rate	Amount	Rate	Amount
		\$	%	\$	%	\$
Tractor (\$600)	2-plow	1,200	7.0	42	5.0	30
Truck (\$800)	$\frac{1}{2}$ ton	1,600	6.0	24	4.0	16
One-way disc (\$100)	$4\frac{1}{2}$ ft.	300	6.0	6	3.0	3
Plow (\$25)	2-14"	200	5.0	1	2.5	1
Cultivator (\$60)	8"	160	6.0	4	2.0	1
Drag harrow	5-section	40	4.0	2	2.0	1
Drill						
Packer						
Binder (\$200)	8"	400	6.0	12	5.0	10
Mower (\$65)	5"	130	4.5	3	4.5	3
Rake (\$25)	10"	65	4.0	1	1.0	
Combine						
Wagon gears (\$50)		75	4.0	2	1.0	
Wagon box (\$25)		55	6.5	2	1.0	
Wagon rack		15	10.0	2	2.0	
Sleigh		25	4.0	1	1.0	
Grinder		30	5.0	2	3.5	1
Dairy equipment		40	8.0	3	2.0	1
Poultry equipment		10	10.0	1	2.0	
Miscellaneous, harness, tools, etc.		200	8.0	16	2.0	4
Total		2,310		124		71
Average value per acre cropland		23.10		1.24		0.71

Table 7a.- Work Schedule for Power Machinery - Farm A

Operation	Number : of acres	Number : of operations	Width : (feet)	Rate : per hour	Acres : per hour	Number : of hours
<u>Summer fallow</u>						
One-way	25	1	4	4	1.6	16
Cultivator	25	6	8	4	3.2	48
Harrow	25	1	16	3	4.8	5
<u>Summer fallow crop</u>						
One-way (seeding)	25	1	4	4	1.6	16
Harrow	25	2	16	3	4.8	10
Binder	25	1	8	3	2.4	10
One-way (fall cultivation)	15	1	4	4	1.6	10
Flow (fall cultivation)	10	1	2	4	0.8	12
<u>Stubble crop</u>						
One-way (seeding)	25	1	4	4	1.6	16
Harrow	25	2	16	3	4.8	10
Binder	25	1	8	3	2.4	10
One-way (fall cultivation)	15	1	4	4	1.6	10
Flow (fall cultivation)	10	1	2	4	0.8	13
<u>Other</u>						
Crushing feed grain	-	-	-	-	-	25
Other	-	-	-	-	-	25
Total hours of equipment and tractor use						236

Table 8a.- Cash Operating Expenses - Farm A

	Rate	Expenses - dollars -
Seed treatment	(4.8¢ bushel	3
Fertilizer	(\$1.00/acre - wheat and forage only	30
Blacksmith and welding		15
Special equipment, repairs		30
General equipment, repairs		31
Small hardware		10
Binder twine	(2.5 /acre at 15¢/lb.	12
Fire insurance	(30¢ for \$100 value of house)	2
Taxes	(mill rate - 30/1000)	41
Tractor gas	(236 hours at 1.5 gal. hr. at 23.5¢/gal.)	
Tractor oil	(236 hours at 0.09 gal. hrs. at 85¢/gal)	
Tractor grease	(236 hours at 2.4¢ / hour	109
Other gas, oil and grease		
Real estate expense - buildings, fences, wells, etc.		21
Labour expense, operator	(4.00 /day)	
Board of labour	(0.80/day	
Board of threshing crew		
Threshing	(Wheat - 8¢/bushel	141
	(Oats - 5¢/bushel	
	(Barley - 6¢/bushel	
	(Alfalfa - 2¢/lb	108
Livestock purchases		15
Feed and supplements		5
Miscellaneous	(Salt and stockfood	
	(Sprays and germicides	
	(Breeding fees	
	(Veterinary and medicines	21
	(Others	77
Cash truck, expense to farm		
Total		678
Average per acre of cropland		6.78

Table 9a.- Summary of Receipts - Farm A

	- dollars -
Crop sales	626
Livestock sales	419
Livestock produce sales	179
Custom labour, etc	40
..... (10 days thrashing at \$4.00 per day)	
Total	1,264
Average per acre of cropland	12.64

Table 10a.- Summary of Expenses - Farm A

Cash operating expenses	678
Depreciation	188
..... (Machinery and equipment 124	
..... (Buildings and improvements 64	
Total	866
Average per acre of cropland	8.66

Table 11a.- Summary of Net Income - Farm A

Total receipts	1,264
Total expenses	866
Net farm income	398
Interest on borrowed capital (50% of \$4,044 at 3.59%	73
Return to operator's labour and investment	325
Average per acre of cropland	3.25

Table 1b.-- Budget for Soil Groups II, III and IV. One Hundred Acres in Cropland

Land Use and Crop Report - Farm B

Land use	Acres	Average yield	Total yield	Farm used	Seed	Feed	Amount	Price	Value
								- dollars -	
Wheat	25	24.6 bu.	615 bu.	44 bu.	87 bu.		304 bu.	0.90	454
Oats	15	46.0 bu.	690 bu.	37 bu.	478 bu.		175 bu.	0.40	70
Barley	10	32.7 bu.	327 bu.	20 bu.	193 bu.		114 bu.	0.50	57
Alfalfa (seed)	10	170 lb.	1,700 lb.	309 lb.	-		1,670 lb.	0.20	334
Alfalfa (hay)	5		15 tons			15 tons			
Grass hay	-								
Improved pasture	10								
Summerfallow	25								
Total cropland	100								
Farmstead	5								
Total improved	105								
Unimproved	205								
Wild hay	10		16 tons			16 tons			915
Total	320								915
Average per acre of cropland									9.15

Table 2b.- Livestock Report - Farm B

Kind	Average inventory		Birth Numbers	Sales		Farm used	
	No.	Wt. : Value		No.	Wt. : Value	No.	Wt. : Value
		- lb. - - \$ -		- lb. - - \$ -		- lb. - - \$ -	
Work horses	2	100					
Milk cows	5	1,150 288	1	1,200 60			
Beef cows							
Steers and heifers							
- 2 years	2	825 120	1	900 65	$\frac{1}{2}$	500 18	
- 1 year	3	600 130	$\frac{1}{2}$	500 18	$\frac{1}{2}$	500 18	
Calves	5	125 43	2	400 58			
Sows	2	56	1	28			
Other hogs	12	60	9	200 166	2	200 37	
Poultry	100	60	40	24 24	40	24 24	
Total		859		419		79	
Average per acre of cropland		8.59		4.19		0.79	

Table 3b.-- Inventory of Livestock Products -- Farm B.

Kind	Total production	Price	Value	Home used		Sales	
				Amount	Price	Value	Amount
- dollars -							
Butterfat	750 lb.	0.30	225	300 lb.	0.30	90	450 lb. 0.30 135
Eggs a/	360 doz.	0.20	72	140 doz.	0.20	28	220 doz. 0.20 44
Total			297			118	179
Average per acre of cropland							1.79
a/ Average production of nine doz. per bird with 40 per cent of flock as layers.							

SUMMARY OF LIVESTOCK AND LIVESTOCK PRODUCTS SALES

Livestock sales	\$ 419
Dairy products sales	135
Poultry products sales	44
	<hr/>
	\$ 598

Table 4b.- Feed Report Farm B

Class of livestock	Number	Wheat	Oats	Barley	Total fodder - tons -
		- bushels -			
Work horses	2		103		7
Milk cows	5		88	31	15
Beef cows					
2-year old steers and heifers	2				4
Yearling steers and heifers	3				3
Calves	5		22	16	2
Sows	2)		206	146	
	12)				
Other hogs					
Poultry	100	67	59	193	31
Total		67	478	193	31

Table 5b.- Buildings and Improvements - Farm B

Building	Value -\$	Depreciation		Repairs - paints, etc.	
		Rate -%	Amount -\$	Rate -%	Amount -\$
House	1,000	2.5	25	1.75	18
Barn	500	3.0	15	1.25	6
Chicken house	100	4.5	4	0.5	
Granaries	200	4.5	9	0.5	1
Garage and machine shed	100	4.5	4	0.5	
Hog house and other buildings	70	4.5	3	0.5	
Fencing	175	3.5	6	0.5	1
Wells, dugouts, etc.	150	3.0	4	0.1	
Total	2,295		70		26
Average value per acre of cropland	22.95		0.70		0.26

Table 6b.- Machinery and Equipment Inventory - Farm B

Machine	Value when new	Size	Depreciation		Repairs	
			Rate	Amount	Rate	Amount
			-%	-\$	-%	-\$
Tractor	(3600)	2-plow	8.0	48	6.0	36
Truck	(3800)	$\frac{1}{2}$ ton	7.0	28	5.0	20
One-way disc	(3100)	4 $\frac{1}{2}$ ton	6.5	6	3.0	3
Plow	(325)	2-14"	5.0	1	2.5	1
Cultivator	(360)	8'	6.0	4	2.0	1
Drag harrow		5-section	4.0	2	2.0	
Drill						
Packer						
Binder	(3200)	8'	7.0	14	5.0	10
Mower	(365)	5'	4.5	3	4.5	3
Rake	(325)	10'	4.0	1	1.0	
Combine						
Wagon gears	(350)		4.0	2	1.0	
Wagon box	(325)		6.5	2	1.0	
Wagon rack			10.0	2	2.0	
Sleigh			4.0	1	1.0	
Grinder			5.0	2	3.5	1
Dairy equipment			8.0	3	2.0	1
Poultry equipment			10.0	1	2.0	
Miscellaneous, harness, tools, etc.			8.0	16	2.0	4
Total	2,310			136		81
Average value per acre of cropland	23.10			1.36		0.91

Table 7b.- Work Schedule for Power Machinery --Farm B.

Operation	Number : of acres :	Number of : operations :	Width : (feet) :	Rate : per hour :	Acres : per hour :	Number : of hours :
<u>Summerfallow</u>						
One-way	25	1	4	4	1.6	16
Cultivator	25	6	8	4	3.2	48
Harrow	25	1	16	3	4.8	5
<u>Summerfallow Crop</u>						
One-way (seeding)	25	1	4	4	1.6	16
Harrow	25	2	16	3	4.8	10
Binder	25	1	8	3	2.4	10
One-way (fall cultivation)	15	1	4	4	1.6	10
Plow (fall cultivation)	10	1	2	4	0.8	12
<u>Stubble Crop</u>						
One-way seeding	25	1	4	4	1.6	16
Harrow	25	2	16	3	4.8	10
Binder	25	1	8	3	2.4	10
One-way (fall cultivation)	15	1	4	4	1.6	10
Plow (fall cultivation)	10	1	2	4	0.8	13
<u>Other</u>						
Crushing feed grain	-	-	-	-	-	25
Other	-	-	-	-	-	25
Total hours of equipment and tractor use						236

Table 8b.- Cash Operating Expenses - Farm 3

	Rate	Expenses - dollars -
Seed treatment	(4.8¢/bushel)	3
Fertilizer	(\$1.00/acre - wheat and forage only)	30
Blacksmith and welding		15
Special equipment, repairs		36
General equipment, repairs		33
Small hardware		10
Binder twine		22
Fire insurance		3
Taxes		79
Tractor gas	(3.0¢/acre @ 15¢/lb.)	
Tractor oil	(30¢ for \$100 value of house)	
Tractor grease	(mill rate - 30/1000)	
Other gas, oil, grease	(236 hours at 1.5 gal. hr. at 23.5¢/gal.)	
Real estate expense - buildings,	(236 hours at 0.09 gal. hr. at 85¢/gal.)	109
fences, wells, etc.	(236 hours at 2.4¢/hour)	
Labour expense, operator		
Board of labour	(\$4.00/day)	26
Board of threshing crew	(\$0.80/day)	
Threshing	(wheat - 8¢/bushel)	
	(oats - 5¢/ ")	
	(barley - 6¢/ ")	151
	(alfalfa - 2¢/ ")	
		129
Livestock purchases		15
Feed and supplements		5
Miscellaneous	(Salt and stockfeed)	
	(Sprays and fumigicides)	
	(Breeding fees)	
	(Veterinary and medicines)	
	(Others)	21
Cash truck expense to farm		81
Total		768
Average per acre of cropland		7.68

Table 9b.- Summary of Receipts - Farm B

Crop sales	915
Livestock sales	419
Livestock produce sales	179
Custom labour, etc. (10 days threshing at \$4.00 per day)	40
Total	1,553
Average per acre of cropland	15.53

Table 10b.- Summary of Expenses - Farm B

Cash operating expenses	768
Depreciation	206
(Machinery and equipment 136 (Buildings and improvements 70)	
Total	974
Average per acre of cropland	9.74

Table 11b.- Summary of Net Income - Farm B

Total receipts	1,553
Total expenses	974
Net farm income	579
Interest on borrowed capital (50% of \$434 at 3.59%)	98
Return to operator's labour and investment	481
Average per acre of cropland	4.81

Table 1c.-- Budget for Soil Groups VII, VIII and X. Three Hundred Acres in Cropland

Land Use and Crop Report - Farm C

Land use	acreage	Average yield	Total yield	Farm used		Sales	
				Seed	Feed amount	Price	Value
							- dollars -
Wheat	90	18.5 bu.	1,665 bu.	158 bu.	67 bu. 1,440 bu.	0.90	1,296
Oats	50	34.6 bu.	1,730 bu.	123 bu.	550 bu. 1,055 bu.	0.40	422
Barley	20	24.6 bu.	492 bu.	40 bu.	233 bu. 219 bu.	0.50	110
Alfalfa (seed)	20	150 lb.	3,000 lb.	60 lb.	- 2,940 lb.	0.20	588
Alfalfa (hay)	10		20 tons		20 tons		
Grass hay	10						
Improved pasture	20						
Summerfallow	80						
Total cropland	300						
Farmstead	5						
Total improved	305						
Unimproved	315						
Wild hay	20		20 tons		20 tons		
Total	640						
Average per acre of cropland							
							2,416
							8.05

Table 2c.- Livestock Report - Farm C

Kind	Average inventory			Birth Numbers	Sales			Farm used		
	No.	Wt.	Value		No.	Wt.	Value	No.	Wt.	Value
	-	lb.	-		-	lb.	-	-	lb.	-
Work horses	2		100							
Milk cows	5	1,150	288							
Beef cows	2	1,200	120		1	1,200	60			
Steers and heifers										
- 2 years	2	825	120		1	900	65			
- 1 year	4	600	174		1 $\frac{1}{2}$	500	54	1 $\frac{1}{2}$	500	18
Calves	7	125	63	7	3	400	87			
Sows	2		56		1		28			
Other hogs	12		60	12	9	200	185	2	200	37
Poultry	100		60		40		24	40		24
Total			1,041				503			79
Total per acre of cropland			3.47				1.68			0.26

Table 3c.- Inventory of Livestock Products - Farm C

Kind	Total :production :	Price :	Value :	Home used		Sales	
				amount :	Price :	amount :	Price : Value
							- dollars -
Butterfat	750 lb.	0.30	225	300 lb.	0.30	90	450 lb. 0.30 135
Eggs a/	360 doz.	0.20	72	140 doz.	0.20	28	220 doz. 0.20 44
Total			297			118	179
Average per acre of cropland			0.99			0.39	0.60

a/ Average production of nine doz. per bird with 40 per cent of flock as layers.

SUMMARY OF LIVESTOCK AND LIVESTOCK PRODUCTS SALES

Livestock sales	\$ 503
Dairy products sales	135
Poultry products sales	44
	<hr/>
	\$ 682

Table 4c.- Feed Report - Farm C

Class of livestock	Number	Wheat	Oats	Barley	Total
		- bushels -			tons -
Work horses	2		103		7
Milk cows	5)		118	42	15
)				
Beef cows	2)				6
)				
2-year old steers and heifers	2				4
Yearling steers and heifers	4				4
Calves	7		35	25	3
Sows	2)		235	166	
)				
Other hogs	12)				
)				
Poultry	100	67	59		
Total		67	550	233	39

Table 5c.- Buildings and Improvements - Farm C

Building	Value - dollars -	Depreciation		Repairs - paint, etc.	
		Rate - per cent -	Amount - dollars -	Rate - per cent -	Amount - dollars -
House	1,500	2.5	25	1.75	26
Barn	300	3.0	24	1.25	10
Chicken house	200	4.5	9	0.5	1
Granaries	400	4.5	18	0.5	2
Garage and machine shed	300	4.5	14	0.5	2
Hog house and other buildings	140	4.5	6	0.5	1
Fencing	300	3.5	10	0.5	2
Wells, dugouts, etc.	150	3.0	4	0.1	
Total	3,790		123		44
Average value per acre of cropland	12.63		0.41		0.15

Table 6c.-- Machinery and Equipment Inventory - Farm C

Machine	Size	Value when new	Depreciation		Repairs	
			Rate -%	Amount -\$	Rate -%	Amount -\$
Traction	2-plow	1,500	8.0	120	5.0	75
Truck	$\frac{1}{2}$ ton	1,600	7.0	35	5.0	25
One-way disc	7'	330	7.0	23	3.5	12
Plow	3-14"	230	5.0	2	2.5	6
Cultivator	8'	160	5.0	10	2.0	3
Drag harrow	5-section	40	4.0	2	2.0	1
Drill	20-run	300	5.5	16	3.0	9
Packer	8'	55	4.0	2	1.5	1
Binder	8'	400	5.0	20	4.0	16
Mower	5'	130	4.3	6	4.5	6
Rake	10'	65	4.0	3	1.0	1
Combine	6' P.F.O.	900	7.0	63	5.5	50
Wagon gears		150	4.0	6	1.0	2
Wagon box		55	6.5	4	1.0	1
Wagon rack		15	10.0	2	2.0	
Sleigh		50	4.0	2	1.0	1
Grinder		75	5.0	4	3.5	3
Dairy equipment		70	8.0	6	2.5	2
Poultry equipment		20	10.0	2	2.0	
Miscellaneous - harness, tools, etc.		230	8.0	20	2.0	5
Total		5,615		348		219
Average value per acre of cropland		18.72		1.16		0.73

Table 7c. Work Schedule for Power Machinery - Farm C

Operation	Number : of acres	Number of : operations	Width : (feet)	Rate : per hour	Acres : per hour	Number : of hours
<u>Summerfallow</u>						
One-way	80	1	6.3	4	2.5	32
Cultivator	80	6	8	3	2.4	200
Harrow	80	1	16	3	4.8	17
<u>Summerfallow Crop</u>						
Cultivator	80	1	8	3	2.4	33
Drill and packer	80	1	10	4	4.0	20
Harrow	80	1	16	3	4.8	17
Binder	10	1	8	4	3.2	3
Combine	125	1	8	2.25	1.8	69
One-way (fall cultivation)	80	1	6.3	4	2.5	32
<u>Stubble Crop</u>						
Cultivator	80	1	8	3	2.4	33
Drill and packer	80	1	10	4	4.0	20
Harrow	80	1	16	3	4.8	17
Binder	40	1	8	4	3.2	12
Combine	100	1	8	2.25	1.8	55
One-way (fall cultivation)	80	1	6.3	4	2.5	32
<u>Other</u>						
Cutting hay	-	-	-	-	-	35
Crushing feed grain	-	-	-	-	-	30
Other	-	-	-	-	-	40
Total hours of equipment and tractor use						697

Table 8c.- Cash Operating Expenses - Farm C

	Rate	Expenses - dollars -
Seed treatment	(4.8¢/ bushel)	9
Fertilizer	(1.00/acre - wheat and forage only)	100
Blacksmith and welding		25
Special equipment, repairs		125
General equipment, repairs		69
Small hardware		25
Binder twine	(2.5¢ / acre at 15¢/ lb.)	9
Fire insurance	(30¢ for \$100 value of house)	5
Taxes	(mill rate - 30/1000)	102
Tractor, gas	(697 hours at 2.0 gal. hr. at 23.5¢ / gal.)	
Tractor, oil	(697 hours at 0.09 gal. hr. at 85¢ / gal.)	
Tractor, grease	(697 hours at 2.4¢ / hour)	431
Other gas, oil, grease		
Real estate expense - buildings, fences, wells, etc.		44
Labour expense, operator	(.65 / month)	
Board of labour	(.22 / month)	
Board of threshing crew		301
Threshing	(oats - 5¢ / bushel)	20
Livestock purchases		15
Feeds and supplements		6
Miscellaneous	(Salt and stockfood)	
	(Sprays and germicides)	
	(Breeding fees)	
	(Veterinary and medicines)	
	(Others)	27
Cash truck expense to farm		113
Total		1,426
Average per acre of cropland		4.75

Table 9c.- Summary of Receipts - Farm C

	- dollars -
Crop sales	2,416
Livestock sales	503
Livestock produce sales	179
Custom labour, etc	112
(45 acres combining at \$2.50 per acre)	
Total	3,210
Average per acre of cropland	10.70

Table 10c.- Summary of Expenses - Farm C

Cash operating expenses	1,426
Depreciation	471
(Machinery and equipment 349 (Buildings and improvements 123)	
Total	1,897
Average per acre of cropland	6.32

Table 11c.- Summary of Net Income - Farm C

Total receipts	3,210
Total expenses	1,897
Net farm income	1,313
Interest on borrowed capital (50% of \$8,692 at 3.59%)	160
Return to operator's labour and investment	1,153
Average per acre of cropland	3.84

Table 1d.- Budget for Soil Groups II, III and IV. Three Hundred Acres in Cropland

Land Use and Crop Report - Farm D

Land use	Acreage	Average yield	Total yield	Farm used Seed	Feed	Amount	Sales Price	Value
								- dollars -
Wheat	90	24.6 bu.	2,214 bu.	158 bu.	67 bu.	1,989 bu.	0.90	1,790
Oats	50	46.0 bu.	2,300 bu.	125 bu.	550 bu.	1,625 bu.	0.40	650
Barley	20	32.7 bu.	654 bu.	40 bu.	233 bu.	381 bu.	0.50	190
Alfalfa (seed)	20	170 lb.	3,400 lb.	60 lb.	-	3,340 lb.	0.20	668
Alfalfa (hay)	10		20 tons		20 tons			
Grass hay	10							
Improved pasture	20							
Summerfallow	80							
Total cropland	300							
Farmstead	5							
Total improved	305							
Unimproved	315							
Wild hay	20		20 tons		20 tons			
Total	640							3,298
Average per acre of cropland								10.99

Table 2d.- Livestock Report - Farm D

Kind	Average inventory		Birth		Sales		Farm used	
	No.	Wt.	Value	Number	No.	Wt.	No.	Wt.
	- lb. -	- lb. -	- \$ -			- lb. -		- lb. -
Work horses	2	100						
Milk cows	5	1,150	288					
Beef cows	2	1,200	120	1	1,200	60		
Steers and heifers	2	825	120	1	900	65	1½	500
- 2 years	4	600	174	1½	500	54		18
- 1 year								
Calves	7	125	63	3	400	87		
Sows	2		56	1		28		
Other hogs	12	60		9	200	185	2	200
Poultry	100			40		24	40	
Total			1,041			503		79
Average per acre of cropland			3.47			1.68		0.26

Table 3d.- Inventory of Livestock Products - Farm D

Kind	Total production	Price		Value		Home used		Sales	
		- \$ -	- \$ -	- \$ -	- \$ -	Amount	Price	Amount	Price
						- dollars -		- dollars -	
Butterfat	750 lb.	0.30		225	300 lb.	0.30	90	450 lb.	0.30
Eggs a/	360 doz.	0.20		72	140 doz.	0.20	28	220 doz.	0.20
Total				297			118		179
Average per acre of cropland				0.99			0.39		0.60
a/ Average production of nine doz. per bird with 40 per cent of flock as layers.									

SUMMARY OF LIVESTOCK AND LIVESTOCK PRODUCTS SALES

Livestock sales	\$ 503
Dairy products sales	135
Poultry products sales	<u>44</u>
	\$ 682

Table 4d.- Feed Report - Farm D

Class of livestock	Number	Wheat	Oats	Barley	Total
		- bushels -	- bushels -		- tons -
Work horses	2		103		7
Milk cows	5			42	15
Beef cows	2				6
2-year old steers and heifers	2				4
Yearling steers and heifers	4				4
Calves	7		35	25	3
Sows	2		235	166	
Other hogs	12				
Poultry	100	67	59		
Total		67	550	233	39

Table 5d.- Buildings and Improvements - Farm D

Building	Valuc -\$	Depreciation		Repairs - paint, etc.	
		Rate -%	Amount -\$	Rate -%	Amount -\$
House	2,000	2.5	50	1.75	35
Barn	800	3.0	24	1.25	10
Chicken house	200	4.5	9	0.5	1
Granaries	400	4.5	18	0.5	2
Garage and machine shed	300	4.5	14	0.5	2
Hog house and other buildings	140	4.5	6	0.5	1
Fencing	300	3.5	10	0.5	2
Wells, dugouts, etc.	150	3.0	4	0.1	
Total	4,290		135		53
Average value per acre of cropland	13.30		0.45		0.18

Table 6d.- Machinery and Equipment Inventory - Farm D

Machine	:	:	Size	Value when new	Depreciation		Repairs	
					Rate	Amount	Rate	Amount
					%	\$	%	\$
Tractor			3-plow	1,500	9.0	135	6.0	90
Truck			$\frac{3}{2}$ ton	1,600	8.0	140	6.0	30
One-way disc	(\$1,000)		7'	330	8.0	26	4.0	13
Plow			3-14"	230	5.0	2	2.5	6
Cultivator	(\$ 50)		8'	160	6.0	10	2.0	3
Drag harrow			5-section	40	4.0	2	2.0	1
Drill			20-run	300	5.5	16	3.0	9
Packer			8'	55	4.0	2	1.5	1
Binder			8'	400	5.0	20	4.0	16
Mower			5'	130	4.5	6	4.5	6
Rake			10'	65	4.0	3	1.0	1
Combine			6 P.T.O.	900	8.0	72	6.5	58
Wagon gears				150	4.0	6	1.0	2
Wagon box				55	6.5	4	1.0	1
Wagon rack				15	10.0	2	2.0	
Sleigh				50	4.0	2	1.0	1
Grinder				75	5.0	4	3.5	3
Dairy equipment				70	8.0	6	2.5	2
Poultry equipment				20	10.0	2	2.0	
Miscellaneous - harness, tools, etc.				250	8.0	20	2.0	5
Total				5,615		380		248
Average value per acre of cropland				18.72		1.27		0.83

Table 7d.-- Work Schedule for Power Machinery -- Farm D

Operation	Number of acres	Number of operations	Width (feet)	Rate per hour	Acres per hour	Number of hours
<u>Summerfallow</u>						
One-way	80	1	6.3	4	2.5	32
Cultivator	80	6	8	3	2.4	200
Harrow	80	1	16	3	4.8	17
<u>Summerfallow Crop</u>						
Cultivator	80	1	8	3	2.4	33
Drill and packer	80	1	10	4	4.0	20
Harrow	80	1	16	3	4.8	17
Binder	10	1	8	4	3.2	3
Combine	125	1	8	2.25	1.8	69
One-way (fall cultivation)	80	1	6.3	4	2.5	32
<u>Stable Crop</u>						
Cultivator	80	1	8	3	2.4	33
Drill and packer	80	1	10	4	4.0	20
Harrow	80	1	16	3	4.8	17
Binder	40	1	8	4	3.2	12
Combine	100	1	8	2.25	1.8	55
One-way (fall cultivation)	80	1	6.3	4	2.5	32
<u>Other</u>						
Cutting hay	-	-	-	-	-	35
Crushing feed grain	-	-	-	-	-	30
Other	-	-	-	-	-	40
Total hours of equipment and tractor use						697

Table 8d. - Cash Operating Expenses - Farm D

	Rate	Expenses
		dollars -
Seed treatment	(4.8¢ - bushel)	9
Fertilizer	(\$1.00 / acre - wheat and forage only)	100
Blacksmith and welding		25
Special equipment, repairs		146
General equipment, repairs		70
Small hardware		25
Binder twine	(3.0 # / acre at 15¢ / lb.)	9
Fire insurance	(30¢ for 100 value of house)	6
Taxes	(mill rate - 30/1000)	204
Tractor gas	(697 hours at 2.0 gal. hr. at 23.5¢/gal.)	431
Tractor oil	(697 hours at 0.08 gal/hr. at 85¢ / gal.)	
Tractor grease	(697 hours at 2.4¢ / hour)	
Other, gas, oil, grease		
Real estate expense - buildings, fences, wells, etc.		53
Labour expense, operator	(.65 / month)	301
Board of labour	(.22 / month)	
Board of threshing crew	(oats - 5¢ / bushel)	20
Threshing		15
Livestock purchases		6
Feeds and supplements	(Salt and stockfood)	
Miscellaneous	(Sprays and germicides)	
	(Breeding fees)	
	(Veterinary and medicines)	27
	(Others)	
Cash truck expense to farm		118
Total		1,567
Average per acre of cropland		5.22

Table 9d.- Summary of Receipts - Farm D

	- dollars -
Crop sales	3,298
Livestock sales	503
Livestock produce sales	179
Custom labour, etc.	112
(45 acres combining at \$2.50 per acre)	
Total	4,092
Average per acre of cropland	13.64

Table 10c.- Summary of Expenses - Farm D

Cash operating expenses	1,567
Depreciation	515
(Machinery and equipment 380	
(Buildings and improvements 135	
Total	2,082
Average per acre of cropland	6.94

Table 11d.- Summary of Net Income - Farm D

Total receipts	4,092
Total expenses	2,082
Net farm income	2,010
Interest on borrowed capital (50% of \$12,527 at 3.59%)	225
Return to operator's labour and investment	1,785
Average per acre of cropland	5.95

APPENDIX C

Table 1.- Farm Prices of Agricultural Products^{a/}, 1921-48

<u>Crops</u>	- dollars -
Wheat	0.90/bu.
Oats	0.40/ bu.
Barley	0.50/bu.
Alfalfa hay	10.50/ton
Alfalfa seed	0.20/lb.
<u>Livestock</u>	
Dairy cow	5.00/cwt.
Other cattle	7.25/cwt.
Sows	28.00/each
Other hogs	9.25/cwt.
Poultry	0.50/each
<u>Livestock Products</u>	
Butterfat	0.30/lb.
Eggs	0.20 doz.

a/ Obtained from Quarterly Bulletins of Agricultural Statistics and Canada Year Book.

Land Values ^{1/} (used to determine tax and capital cost of land).

- \$9 per acre of cropland in Soil Groups VII, VIII, X.
- \$19 per acre of cropland in Soil Groups II, III, IV.
- \$2 per acre of unimproved land in Soil Groups VII, VIII, X.
- \$3 per acre of unimproved land in Soil Groups II, III, IV.

1/ Calculations based on information obtained from The Saskatchewan Rural Land Assessment System by T.H. Freeman, W.E. Thompson and C.H. Chappell, 1950

